

Teacher's Scoring Guide

1STEP+



Mathematics
Applied Skills Assessment

Spring 2007
Graduation Qualifying Exam Retest

Indiana Statewide Testing for Educational Progress



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INTRODUCTION

The *ISTEP+* GQE Retest was administered during the spring of 2007 to students who entered high school (Grade 9) after August 2003. This gave students another opportunity to pass the graduation qualifying examination. The GQE Retest consisted of two parts: (1) a multiple-choice section and (2) an applied skills section. Each part included two content areas, English/Language Arts and Mathematics. Students completed only the content area(s) of the test on which they did not previously meet the Indiana Academic Standards. The multiple-choice section of the GQE Retest was machine-scored. The applied skills section, which consisted of open-ended questions and a writing prompt, was hand-scored during March and April 2007.

The results of both the multiple-choice section and the applied skills section were returned to the schools in May 2007. Copies of student responses in the applied skills section were also returned to the schools in May 2007. It is the Indiana Department of Education's expectation that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To help in this process, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide*. The purpose of this guide is to help teachers to:

- understand the methods used to score the GQE Retest Applied Skills Assessment, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and a copy of the student's work.

There are two scoring guides for the GQE Retest, English/Language Arts and Mathematics. In this Mathematics guide, you will find:

- an introduction,
- a list of the Mathematics Grade 8 and the Algebra I Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.state.in.us) or call the Indiana Department of Education at (317) 232-9050.

* The Mathematics academic standards assessed in the GQE Retest are a combination of the Grade 8 Mathematics and the Algebra I standards that were adopted in September 2000.

INTRODUCTION TO THE MATHEMATICS APPLIED SKILLS ASSESSMENT

The Applied Skills Assessment in the GQE Retest that students took this past spring allowed students to demonstrate their understanding of Mathematics in a variety of ways, such as applying formulas, explaining a solution, transforming a figure, or interpreting a table or graph.

STRUCTURE

The open-ended questions for the Mathematics Applied Skills Assessment were divided into two tests, Test 1 and Test 2. Each test consisted of eight open-ended questions. Students were permitted to use calculators on Test 2 but **not** on Test 1.

SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for the Mathematics portion of this administration of the GQE Retest had a maximum possible score of two or three score points.

NOTE: Images of the questions and student work have been reduced to fit the format of this guide. As a result, figures and diagrams in measurement questions will appear smaller in this guide than in the actual test book.

Rubrics describe the requirements for each score point level. The number of score point levels possible varies according to the requirements of each activity. The performance criteria (requirements) comprising the rubrics were established prior to testing to ensure that all responses are judged objectively.

1. Students should not be penalized for omitting:

- degree symbols
- dollar signs (\$) or cent signs (¢)
- zeros for place holders; for example, either 0.75 or .750 could be used
- labels for word problems; for example, *miles*

NOTE: Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for:

- spelling or grammar errors
- using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for:

- entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work)
- answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which response the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.

4. Students should be given credit for:

- bar graphs with bars of any width
- bar graphs with either horizontal or vertical bars
- circle graphs with data presented in any order
- line graphs only if lines connect the points

CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal

B Illegible

C Written predominantly in a language other than English

D Insufficient response/Copied from text

MATHEMATICS GRADE 8

INDIANA ACADEMIC STANDARDS

☐ **Number Sense**

Students know the properties of rational and irrational numbers expressed in a variety of forms. They understand and use exponents, powers, and roots.

☐ **Computation**

Students compute with rational numbers expressed in a variety of forms. They solve problems involving ratios, proportions, and percentages.

☐ **Algebra and Functions**

See the Algebra I Standards on the next page.

☐ **Geometry**

Students deepen their understanding of plane and solid geometric shapes and properties by constructing shapes that meet given conditions, by identifying attributes of shapes, and by applying geometric concepts to solve problems.

☐ **Measurement**

Students convert between units of measure and use rates and scale factors to solve problems. They compute the perimeter, area, and volume of geometric objects. They investigate how perimeter, area, and volume are affected by changes of scale.

☐ **Data Analysis and Probability**

Students collect, organize, represent, and interpret relationships in data sets that have one or more variables. They determine probabilities and use them to make predictions about events.

☐ **Problem Solving**

Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable, and move beyond a particular problem by generalizing to other situations.

ALGEBRA I

INDIANA ACADEMIC STANDARDS

- ☐ **Operations with Real Numbers**
Students simplify and compare expressions. They use rational exponents and simplify square roots.
- ☐ **Linear Equations and Inequalities**
Students solve linear equations and inequalities in one variable. They solve word problems that involve linear equations, inequalities, or formulas.
- ☐ **Relations and Functions**
Students sketch and interpret graphs representing given situations. They understand the concept of a function and analyze the graphs of functions.
- ☐ **Graphing Linear Equations and Inequalities**
Students graph linear equations and inequalities in two variables. They write equations of lines and find and use the slope and y-intercept of lines. They use linear equations to model real data.
- ☐ **Pairs of Linear Equations and Inequalities**
Students solve pairs of linear equations using graphs and using algebra. They solve pairs of linear inequalities using graphs. They solve word problems involving pairs of linear equations.
- ☐ **Polynomials**
Students add, subtract, multiply, and divide polynomials. They factor quadratics.
- ☐ **Algebraic Fractions**
Students simplify algebraic ratios and solve algebraic proportions.
- ☐ **Quadratic, Cubic, and Radical Equations**
Students graph and solve quadratic and radical equations. They graph cubic equations.
- ☐ **Mathematical Reasoning and Problem Solving**
Students use a variety of strategies to solve problems. Students develop and evaluate mathematical arguments and proofs.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different indicators from Content Skills in addition to the indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional indicators may be from the same or different Content Skills.

NOTE: For the Process Skill questions, score points are awarded **only** for the Process Skill, not for the Content Skill associated with the question.

The Content Skills used for each of the Process Skill questions in the GQE Retest Applied Skills Assessment are shown in the following chart.

PROCESS SKILL QUESTIONS

Question	Process Skills (score points awarded)	Content Skills (score points not awarded) <i>Item may map to more than one indicator in a standard.</i>
Test 1		
4	Problem Solving	Algebra and Functions, Algebra and Functions
6	Problem Solving	Number Sense, Measurement
Test 2		
2	Problem Solving	Geometry, Computation
5	Problem Solving	Data Analysis and Probability, Measurement
8	Problem Solving	Algebra and Functions, Measurement

Test 1—Question 1: Algebra and Functions

1 Solve: $\frac{x + 1}{4} = \frac{-1}{2}$

Show All Work

Answer $x =$ _____

Exemplary Response:

- -3

Sample Process:

- $$\begin{aligned}\frac{x + 1}{4} &= \frac{-1}{2} \\ 2(x + 1) &= -4 \\ 2x + 2 &= -4 \\ 2x &= -6 \\ x &= -3\end{aligned}$$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

Test 1—Question 1
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of -3. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2

1 Solve: $\frac{x+1}{4} = \frac{-1}{2}$

Show All Work

$$\begin{aligned}x + 1 &= -2 \\x &= -3\end{aligned}$$

Answer $x = \underline{\quad -3 \quad}$

Test 1—Question 1
Score Point 1

This response shows a correct complete process, but a computational error results in an incorrect answer. The computational error is made when the student subtracts 1 from -2 and gets -1 instead of the correct answer -3. Therefore, this response receives a Score Point 1.

SCORE POINT 1

1 Solve: $\frac{x+1}{4} = \frac{-1}{2}$

Show All Work

$$\begin{aligned}\frac{4}{1} \cdot \frac{x+1}{4} &= \frac{-1}{2} \cdot \frac{4}{1} \\x + 1 &= \frac{-4}{2} \\x + 1 &= -2 - 1 \\x &= -1\end{aligned}$$

Answer $x = \underline{\quad x = (-1) \quad}$

Test 1—Question 1
Score Point 0

This response shows an incorrect answer and an incorrect process. The student does not divide by four after distributing 4 and $x + 1$. Therefore, this response receives a Score Point 0.

SCORE POINT 0

1 Solve: $\frac{x+1}{4} = \frac{-1}{2}$

Show All Work

$$\begin{aligned}4 \cdot \frac{x+1}{4} &= \frac{-1}{2} \cdot 4 \\4x + 4 &= -2 \\4x &= -6 \\x &= \frac{-3}{2} = -1\frac{1}{2}\end{aligned}$$

Answer $x = \underline{\quad -1\frac{1}{2} \quad}$

Test 1—Question 2: Algebra and Functions

- 2** What is the slope of the line that passes through the points (-2, 3) and (5, 4)?



Show All Work

Answer _____

Exemplary Response:

- $\frac{1}{7}$

OR

- Other valid slope

Sample Process:

- Slope = $m = \frac{y_2 - y_1}{x_2 - x_1}$
 $= \frac{4 - 3}{5 - (-2)}$
 $= \frac{1}{7}$

OR


- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other


Test 1—Question 2 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of $\frac{1}{7}$. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2	
2	What is the slope of the line that passes through the points (-2, 3) and (5, 4)?
	Show All Work
	$\frac{3-4}{-2-5} = \frac{-1}{-7} = \frac{1}{7}$
	Answer $\frac{1}{7}$


Test 1—Question 2 Score Point 1

This response shows a correct complete process, but a computational error results in an incorrect answer. The computational error is made when the student subtracts 4 from 3 getting 1 instead of -1. Therefore, this response receives a Score Point 1.

SCORE POINT 1	
2	What is the slope of the line that passes through the points (-2, 3) and (5, 4)?
	Show All Work
	$\frac{3-4}{-2-5} = \frac{1}{-7}$
	Answer $\frac{1}{-7}$

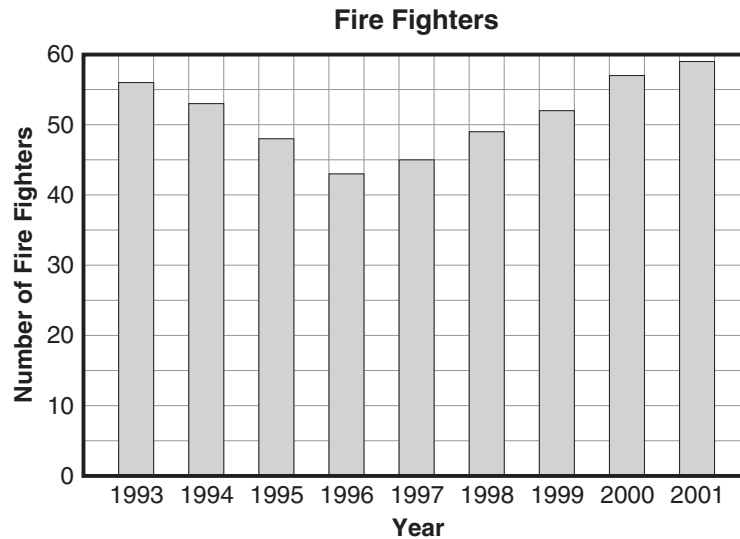
Test 1—Question 2 Score Point 0

This response shows an incorrect answer and an incorrect process. The student substitutes the incorrect values into the slope formula. Therefore, this response receives a Score Point 0.

SCORE POINT 0	
2	What is the slope of the line that passes through the points (-2, 3) and (5, 4)?
	Show All Work
	$\frac{5-4}{-2+3} = \frac{-1}{5}$
	Answer $-1/5$

Test 1—Question 3: Data Analysis and Probability

- 3** The mayor of Kent looked at the bar graph below and stated, “Since taking office in 1993, I have steadily increased the number of fire fighters on the job.”



The mayor's claim is unreasonable. On the lines below, explain why the claim is unreasonable and how it could be changed to make it reasonable. Be sure to justify your answer with data from the graph.

Exemplary Response:

- The mayor's claim is unreasonable because from 1993–1996 the number of fire fighters actually decreased.

AND

- The mayor could have claimed that since he took office there was a net increase in the number of fire fighters.

OR

- The mayor could have claimed that from 1996–2001, the number of fire fighters has steadily increased.

OR

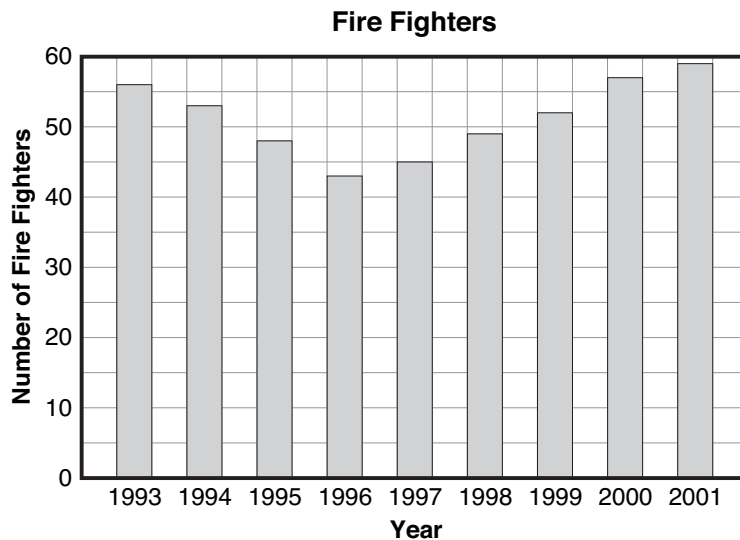
- Other valid explanation

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

SCORE POINT 2

- 3** The mayor of Kent looked at the bar graph below and stated, “Since taking office in 1993, I have steadily increased the number of fire fighters on the job.”



The mayor's claim is unreasonable. On the lines below, explain why the claim is unreasonable and how it could be changed to make it reasonable. Be sure to justify your answer with data from the graph.

From 1993 to 1996 the number of firefighters decreased. If he had said since 1996 it had steadily increased, then he would be correct.

Test 1—Question 3 Score Point 2

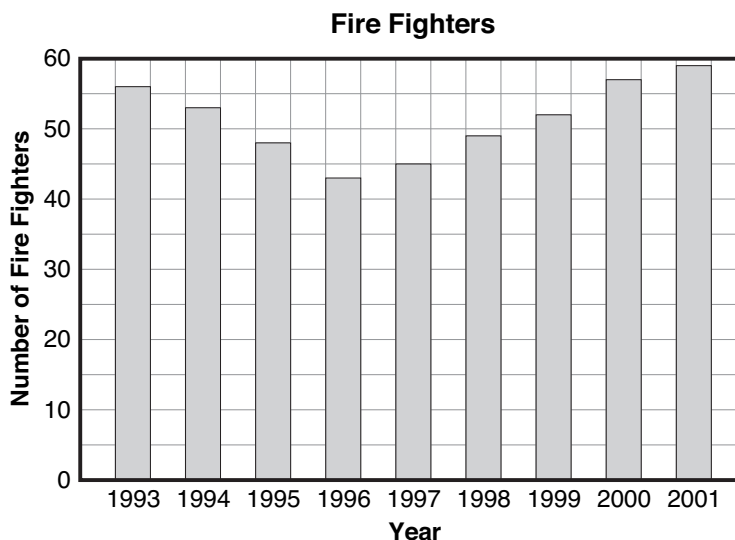
This response matches the exemplary response contained in the rubric. The student gives a correct explanation of why the claim is unreasonable and a correct explanation of how the claim can be changed to make it reasonable. The response receives a Score Point 2.

Test 1—Question 3
Score Point 1

This response gives a correct explanation of why the claim is unreasonable. However, the student does not explain how the claim can be changed to make it reasonable. Therefore, this response receives a Score Point 1.

SCORE POINT 1

- 3** The mayor of Kent looked at the bar graph below and stated, “Since taking office in 1993, I have steadily increased the number of fire fighters on the job.”

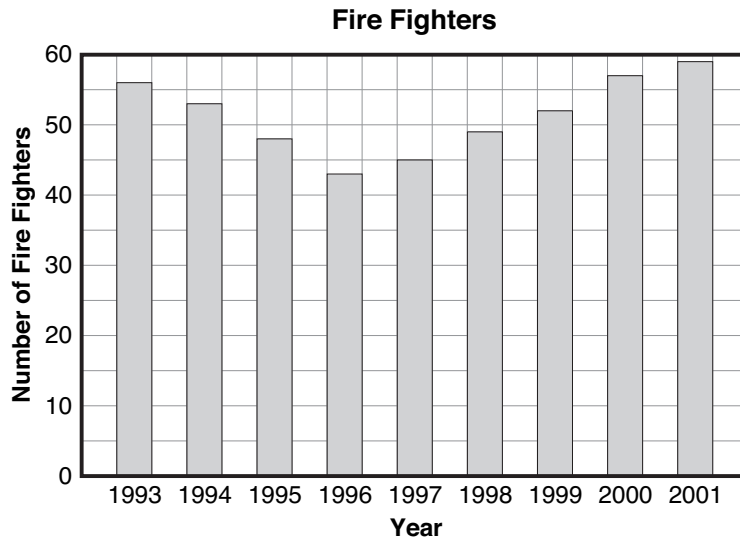


The mayor's claim is unreasonable. On the lines below, explain why the claim is unreasonable and how it could be changed to make it reasonable. Be sure to justify your answer with data from the graph.

The number of firefighters decreased from 1993 to 1996, but
then increased from 1997 to 2001

SCORE POINT 0

- 3** The mayor of Kent looked at the bar graph below and stated, “Since taking office in 1993, I have steadily increased the number of fire fighters on the job.”



The mayor's claim is unreasonable. On the lines below, explain why the claim is unreasonable and how it could be changed to make it reasonable. Be sure to justify your answer with data from the graph.

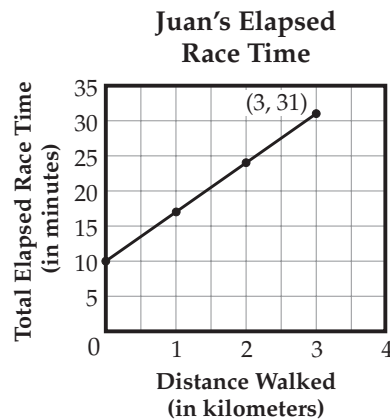
Its unreasonable because all the data on the chart put together
does not match.

Test 1—Question 3 Score Point 0

This response does not give an explanation of why the claim is unreasonable nor does it show how the claim can be changed to make it reasonable. Therefore, this response receives a Score Point 0.

Test 1—Question 4: Problem Solving

- 4** Juan participated in a 5-kilometer race. He ran the first 2 kilometers and then walked the rest of the race. The graph below shows Juan's total elapsed race time while he was walking.



Which value, the x -intercept, the y -intercept, or the slope should be used to determine the time in which Juan ran the first 2 kilometers of the race?

Answer _____

What is the rate of speed, in kilometers per hour, for the portion of the race that Juan RAN? Write your answer on the line below.

Show All Work

Answer _____ kilometers per hour

Exemplary Response:

- y-intercept

AND

- 12 kilometers per hour

AND

- Correct complete process

Sample Process:

- $$= \frac{2 \text{ kilometers}}{10 \text{ minutes}} \cdot \frac{60 \text{ minutes}}{1 \text{ hour}}$$
$$= \frac{2(60)}{10} \text{ km/hr}$$
$$= 12 \text{ km/hr}$$

OR

- Other valid process

NOTE: Award credit for correct complete process; error in computation

Rubric:

3 points Exemplary response

2 points Two correct components

1 point One correct component

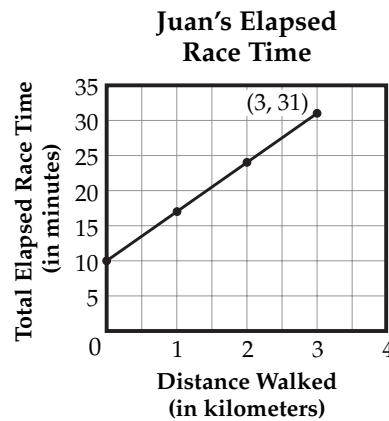
0 points Other

Test 1—Question 4
Score Point 3

This response matches the exemplary response contained in the rubric. The student shows correct answers of y-intercept and 12 kilometers per hour. A correct complete process for finding Juan's speed is shown. The response receives a Score Point 3.

SCORE POINT 3

- 4** Juan participated in a 5-kilometer race. He ran the first 2 kilometers and then walked the rest of the race. The graph below shows Juan's total elapsed race time while he was walking.



Which value, the x -intercept, the y -intercept, or the slope should be used to determine the time in which Juan ran the first 2 kilometers of the race?

Answer y-intercept

What is the rate of speed, in kilometers per hour, for the portion of the race that Juan RAN? Write your answer on the line below.

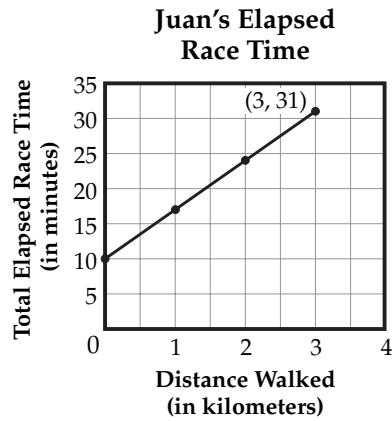
Show All Work

$$\frac{2 \text{ km}}{10 \text{ min}} \cdot \frac{60 \text{ min}}{\text{hr}} = \frac{120 \text{ min}}{10 \text{ hr}} = \frac{12 \text{ km}}{\text{hr.}}$$

Answer 12 kilometers per hour

SCORE POINT 2

- 4** Juan participated in a 5-kilometer race. He ran the first 2 kilometers and then walked the rest of the race. The graph below shows Juan's total elapsed race time while he was walking.



Which value, the x -intercept, the y -intercept, or the slope should be used to determine the time in which Juan ran the first 2 kilometers of the race?

Answer Slope

What is the rate of speed, in kilometers per hour, for the portion of the race that Juan RAN? Write your answer on the line below.

Show All Work

$$\begin{array}{rcl}
 10 \text{ min. to race 2 km.} & & \\
 \times 6 & \quad \quad \quad & \times 6 \\
 \hline
 60 \text{ min to race 12 km} & &
 \end{array}$$

Answer 12 kilometers per hour

Test 1—Question 4 Score Point 2

This response shows an incorrect answer of slope. However, the student shows a correct complete process and a correct answer for Juan's speed. Therefore, this response receives a Score Point 2.

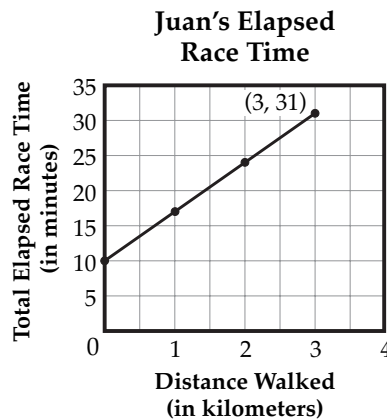
Test 1—Question 4

Score Point 1

This response shows a correct answer of y -intercept. However, an incorrect process results in an incorrect answer for kilometers per hour. The student attempts to determine the speed that Juan walked, not the speed that he ran. Therefore, this response receives a Score Point 1.

SCORE POINT 1

- 4** Juan participated in a 5-kilometer race. He ran the first 2 kilometers and then walked the rest of the race. The graph below shows Juan's total elapsed race time while he was walking.



Which value, the x -intercept, the y -intercept, or the slope should be used to determine the time in which Juan ran the first 2 kilometers of the race?

Answer y -intercept

y -int = elapsed amount
of time

What is the rate of speed, in kilometers per hour, for the portion of the race that Juan RAN? Write your answer on the line below.

Show All Work

$$y \ (0, 10) \ (3, 31)$$

$$7 \text{ minutes} \quad \begin{array}{r} 8 \\ 7 \overline{)60} \\ \underline{56} \\ 4 \end{array}$$

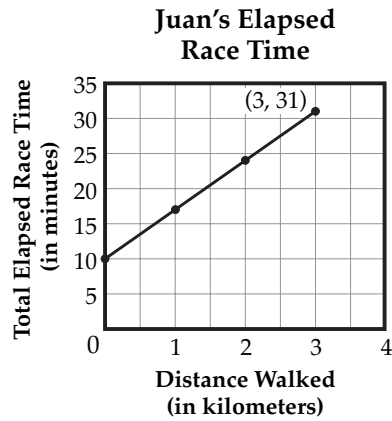
$$\frac{y^2 - y^1}{x^2 - x^1} = \text{rate}$$

$$\frac{31 - 10}{3 - 0} = \frac{21}{3} = 7 \text{ mpk}$$

Answer 8 kilometers per hour

SCORE POINT 0

- 4** Juan participated in a 5-kilometer race. He ran the first 2 kilometers and then walked the rest of the race. The graph below shows Juan's total elapsed race time while he was walking.



Which value, the x -intercept, the y -intercept, or the slope should be used to determine the time in which Juan ran the first 2 kilometers of the race?

Answer Slope

What is the rate of speed, in kilometers per hour, for the portion of the race that Juan RAN? Write your answer on the line below.

Show All Work

$$d = rt$$

$$\frac{2}{24} = r \cdot 24$$

$$\frac{12.5}{2} = 25.0$$

$$\frac{24}{192} = \frac{1}{8}$$

$$\frac{24}{72} = \frac{1}{3}$$

$$\frac{0.083}{24} = 2.000$$

$$\frac{192}{80} = 2.4$$

$$\frac{-72}{8}$$

Answer 12.5 kilometers per hour

Test 1—Question 4 Score Point 0

This response shows an incorrect answer of slope and an incorrect process that results in an incorrect answer for Juan's speed. Therefore, this response receives a Score Point 0.

Test 1—Question 5: Algebra and Functions

- 5** As a part-time writer, Sean is paid \$150 per week and \$15 per article. He needs to earn at least \$300 per week to meet expenses. What is the minimum number of articles Sean must write to meet expenses?

Show All Work

Answer _____ articles

Exemplary Response:

- 10 articles

Sample Process:

- $15a + 150 \geq 300$
 $15a \geq 150$
 $a \geq 10$

OR

- Other valid process

Rubric:

- | | |
|-----------------|--|
| 2 points | Exemplary response |
| 1 point | Correct complete process; error in computation |
| 0 points | Other |

SCORE POINT 2**5**

As a part-time writer, Sean is paid \$150 per week and \$15 per article. He needs to earn at least \$300 per week to meet expenses. What is the minimum number of articles Sean must write to meet expenses?

Show All Work

$$\begin{array}{r}
 10 \\
 15 \overline{)150} \\
 \underline{15} \\
 0
 \end{array}
 \qquad
 \begin{array}{r}
 2 \\
 300 \\
 -150 \\
 \hline
 150
 \end{array}$$

$x = \# \text{ of articles}$
 $15x + 150 = 300$
 $15x = 150$
 $x = 10$

Answer 10 articles

**Test 1—Question 5
Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 10 articles. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 1**5**

As a part-time writer, Sean is paid \$150 per week and \$15 per article. He needs to earn at least \$300 per week to meet expenses. What is the minimum number of articles Sean must write to meet expenses?

Show All Work

$$\begin{array}{r}
 150 \\
 + 15 \\
 \hline
 165 \\
 + 15 \\
 \hline
 180 \\
 + 15 \\
 \hline
 195
 \end{array}
 \qquad
 \begin{array}{r}
 195 \\
 + 15 \\
 \hline
 205 \\
 + 15 \\
 \hline
 220 \\
 + 15 \\
 \hline
 235 \\
 + 15 \\
 \hline
 250
 \end{array}
 \qquad
 \begin{array}{r}
 250 \\
 + 15 \\
 \hline
 265 \\
 + 15 \\
 \hline
 280 \\
 + 15 \\
 \hline
 295 \\
 + 15 \\
 \hline
 300
 \end{array}$$

Answer 11 articles

**Test 1—Question 5
Score Point 1**

This response shows a correct complete process, but computational errors result in an incorrect answer. An error is made when the student adds 195 and 15 getting 205 instead of 210. Also, an error is made when the student adds 295 and 15 getting 300 instead of 310. Therefore, this response receives a Score Point 1.

Test 1—Question 5
Score Point 0

This response shows an incorrect process resulting in an incorrect answer. The student does not include the \$150 paid per week with the total earnings. Therefore, this response receives a Score Point 0.

SCORE POINT 0

- 5** As a part-time writer, Sean is paid \$150 per week and \$15 per article. He needs to earn at least \$300 per week to meet expenses. What is the minimum number of articles Sean must write to meet expenses?

Show All Work

per week \$150

\$300 per week to meet
expenses

$$300 \div 15 = 20$$

\$15 per article

$$\begin{array}{r} 20 \\ \times 15 \\ \hline \$300 \end{array}$$

Answer 20 articles

Test 1—Question 6: Problem Solving

6



A satellite in a high orbit travels at a rate of 9.37×10^6 meters per hour. A satellite in a lower orbit travels at a rate of 2.74×10^7 meters per hour.

How much farther, in meters, will the satellite in the lower orbit travel than the satellite in the higher orbit in a 24 hour period? Express your answer in scientific notation.

Show All Work

Answer _____ meters

Exemplary Response:

- 4.3272×10^8 meters

AND

- Correct complete process

Sample Process:

- Distance higher satellite travels:

$$\begin{aligned} 24(9.37 \times 10^6) &= 224.88 \times 10^6 \text{ meters} \\ &= 2.2488 \times 10^8 \text{ meters} \end{aligned}$$

Distance lower satellite travels:

$$\begin{aligned} 24(2.74 \times 10^7) &= 65.76 \times 10^7 \text{ meters} \\ &= 6.576 \times 10^8 \text{ meters} \end{aligned}$$

$$6.576 \times 10^8 - 2.2488 \times 10^8 = 4.3272 \times 10^8 \text{ meters}$$

OR

- Other valid process

Rubric:

2 points Exemplary response

1 point Correct answer only

OR

Correct complete process; error in computation

0 points Other

Test 1—Question 6 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and the correct answer of 4.33×10^8 meters. The response receives a Score Point 2.

SCORE POINT 2	
6	<p>A satellite in a high orbit travels at a rate of 9.37×10^6 meters per hour. A satellite in a lower orbit travels at a rate of 2.74×10^7 meters per hour.</p> <p>How much farther, in meters, will the satellite in the lower orbit travel than the satellite in the higher orbit in a 24 hour period? Express your answer in scientific notation.</p> <p style="text-align: center;">Show All Work</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> $\begin{array}{r} 6.57 \\ -2.24 \\ \hline 4.33 \end{array}$ </div> <div style="width: 50%;"> $\begin{aligned} 9.37 \times 10^6 \times 24 &= 224.88 \times 10^6 \rightarrow 2.24 \times 10^8 \\ 2.74 \times 10^7 \times 24 &= 65.76 \times 10^7 \rightarrow 6.57 \times 10^8 \end{aligned}$ <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: right;"> $\begin{array}{r} \overset{1}{9}.\overset{2}{3}7 \\ \times \quad 24 \\ \hline 3248 \\ +18740 \\ \hline 224.88 \end{array}$ </div> <div style="text-align: right;"> $\begin{array}{r} \overset{1}{2}.\overset{1}{7}4 \\ \times \quad 24 \\ \hline 1096 \\ +5480 \\ \hline 65.76 \end{array}$ </div> </div> </div> </div>
<p>Answer <u>4.33×10^8</u> meters</p>	

Test 1—Question 6 Score Point 1

This response shows a correct complete process. However, the student does not write the answer in scientific notation. Therefore, this response receives a Score Point 1.

SCORE POINT 1	
6	<p>A satellite in a high orbit travels at a rate of 9.37×10^6 meters per hour. A satellite in a lower orbit travels at a rate of 2.74×10^7 meters per hour.</p> <p>How much farther, in meters, will the satellite in the lower orbit travel than the satellite in the higher orbit in a 24 hour period? Express your answer in scientific notation.</p> <p style="text-align: center;">Show All Work</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> $\begin{array}{r} 9.37 \times 10^6 \\ 9,370,000 \end{array}$ </div> <div style="width: 50%;"> $\begin{aligned} 2.74 \times 10^7 \\ 27,400,000 \end{aligned}$ <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: right;"> $\begin{array}{r} \overset{1}{2}7.\overset{17}{4}00,000 \\ - \quad 9,370,000 \\ \hline 18,030,000 \end{array}$ </div> <div style="text-align: right;"> $\begin{array}{r} \overset{3}{1}8,030,000 \\ \times \quad \quad 24 \\ \hline \overset{1}{7}2120000 \\ +360600000 \\ \hline 43,272.0000 \end{array}$ </div> </div> </div> </div>
<p>Answer <u>$43,272 \times 10^4$</u> meters</p>	

SCORE POINT 0**6**

A satellite in a high orbit travels at a rate of 9.37×10^6 meters per hour. A satellite in a lower orbit travels at a rate of 2.74×10^7 meters per hour.

How much farther, in meters, will the satellite in the lower orbit travel than the satellite in the higher orbit in a 24 hour period? Express your answer in scientific notation.

Show All Work

$$\begin{array}{r} 9.37 \times 10^6 \\ -2.74 \times 10^7 \\ \hline \end{array}$$

Answer 7.49×10^3 meters

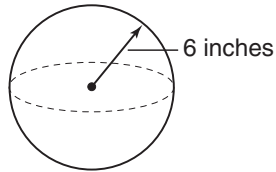
**Test 1—Question 6
Score Point 0**

This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

Test 1—Question 7: Measurement

7

Look at the diagram of a sphere shown below.



What is the volume, in cubic inches, of the sphere?

Show All Work

Answer _____ cubic inches

Exemplary Response:

- 904.32 or 288π cubic inches
- AND
- Correct process

Sample Process:

$$\begin{aligned} \bullet V &= \frac{4}{3}\pi r^3 \\ &= \frac{4}{3}\pi(6)^3 \\ &= \frac{4}{3} \times 216\pi \\ &= 288\pi \\ &\approx 904.32 \text{ cubic inches} \end{aligned}$$

OR

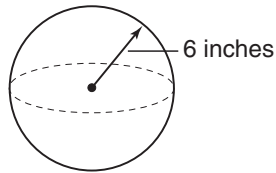
- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct formula with values correctly substituted in
	OR
	Correct application of the formula
	OR
	Correct answer only
0 points	Other

SCORE POINT 2

- 7** Look at the diagram of a sphere shown below.



What is the volume, in cubic inches, of the sphere?

Show All Work

$$\frac{4}{3} \pi r^3$$

$$\begin{array}{r} 216 \\ \times 3.14 \\ \hline 1864 \\ 2160 \\ + 64800 \\ \hline 678.24 \end{array}$$

$$\begin{array}{r} 36 \\ \times 6 \\ \hline 216 \end{array}$$

$$\frac{4}{3} \cdot 678.24$$

$$\begin{array}{r} 678.24 \\ \times 4 \\ \hline 2712.96 \end{array}$$

Answer 904.32 cubic inches

Test 1—Question 7 Score Point 2

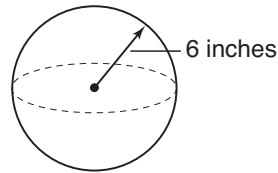
This response matches the exemplary response contained in the rubric. The student shows a correct complete process and the correct answer of 904.32 cubic inches. The response receives a Score Point 2.

Test 1—Question 7
Score Point 1

This response shows a correct application of the formula for the volume of a sphere, but a computational error results in an incorrect answer. The computational error is made when the student multiplies 288 and 3.14 getting 914.32 instead of 904.32. Therefore, this response receives a Score Point 1.

SCORE POINT 1

- 7** Look at the diagram of a sphere shown below.



What is the volume, in cubic inches, of the sphere?

Show All Work

$$\frac{4}{3} \pi 6^3$$

$$\begin{array}{r} 36 \\ \times 6 \\ \hline 216 \end{array}$$

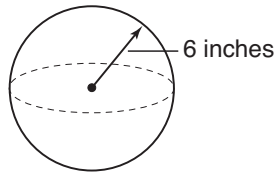
$$\begin{array}{r} 216 \\ \times 4 \\ \hline 864 \end{array}$$

$$\begin{array}{r} 288 \\ \times 3.14 \\ \hline 2880 \\ 904.32 \\ \hline 914.32 \end{array}$$

Answer 914.32 cubic inches

SCORE POINT 0

- 7 Look at the diagram of a sphere shown below.



What is the volume, in cubic inches, of the sphere?

Show All Work

$$\frac{3}{4} \pi r^3$$

$$\begin{aligned} &3/4 \cdot 3.14 \cdot 6^3 \\ &3/4 \cdot 3.14 \cdot 216 \\ &3/4 \cdot 678.24 \end{aligned}$$

$$\begin{array}{r} 3 \\ 36 \\ \underline{6} \\ 216 \\ 5 \ 3 \ 1 \ 2 \\ 678.24 \\ \underline{.75} \\ 1 \ 339420 \\ 4747680 \\ \hline 508.6800 \end{array}$$

$$\begin{array}{r} 2 \\ 216 \\ 3.14 \\ 11 \\ \hline 864 \\ 2160 \\ 64800 \\ \hline 678.24 \end{array}$$

Answer 508.68 cubic inches

Test 1—Question 7 Score Point 0

This response shows an incorrect process resulting in an incorrect answer. The student uses an incorrect formula for determining the volume of a sphere. Therefore, this response receives a Score Point 0.

Test 1—Question 8: Algebra and Functions

8 Solve the pair of equations shown below.

$$2x + 2y = 12$$

$$3x - 2y = 8$$

Show All Work

Answer $x = \underline{\hspace{2cm}}, y = \underline{\hspace{2cm}}$

Exemplary Response:

- $x = 4, y = 2$

Sample Process:

- $2x + 2y = 12$

$$\begin{array}{r} 3x - 2y = 8 \\ \hline \end{array}$$

$$5x = 20$$

$$x = 4$$

AND

- $2(4) + 2y = 12$

$$8 + 2y = 12$$

$$2y = 4$$

$$y = 2$$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

- 8** Solve the pair of equations shown below.

$$\begin{aligned} 2x + 2y &= 12 \\ 3x - 2y &= 8 \end{aligned}$$

Show All Work

$$\begin{array}{r} 2x + 2y = 12 \\ + 3x - 2y = 8 \\ \hline \end{array}$$

$$5x = 20$$

$$2(4) + 2y = 12$$

$$8 + 2y = 12$$

$$2y = 4$$

$$y = 2$$

Answer $x = \underline{4}, y = \underline{2}$

**Test 1—Question 8
Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 4 and 2. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 1

- 8** Solve the pair of equations shown below.

$$\begin{aligned} 2x + 2y &= 12 \\ 3x - 2y &= 8 \end{aligned}$$

Show All Work

$$2y = -2x + 12$$

$$y = -x - 6$$

$$3x - 2(-x - 6) = 8$$

$$3x + 2 + 12 = 8$$

$$3x + 14 = 8$$

$$3x = -6$$

$$x = -2$$

$$3(-2) - 2y = 8$$

$$-6 - 2y = 8$$

$$-2y = 14$$

$$y = -7$$

Answer $x = \underline{-2}, y = \underline{-7}$

**Test 1—Question 8
Score Point 1**

This response shows a correct complete process, but computational errors result in an incorrect answer. A computational error is made when the student divides 12 by 2 getting -6 instead of 6. Also, a computational error is made when using the distributive property. Therefore, this response receives a Score Point 1.

Test 1—Question 8
Score Point 0

This response shows a partial process resulting in an incorrect answer. The student correctly finds the value of x , but does not use that result to find the value of y . Therefore, this response receives a Score Point 0.

SCORE POINT 0

8

Solve the pair of equations shown below.

$$\begin{array}{r} \cancel{2x} + \cancel{2y} = \cancel{12} \\ + \cancel{3x} - \cancel{2y} = \cancel{8} \end{array}$$

Show All Work

$$\frac{5x}{5} + 0 = \frac{20}{5}$$

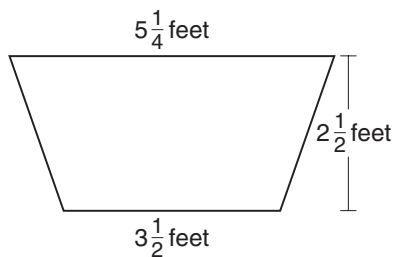
Answer $x =$ 4, $y =$ 0

Test 2—Question 1: Measurement

1



Mr. Palma is making a desk that has a top in the shape of a trapezoid, as shown in the diagram below.



What is the area, in square feet, of the top of the desk?

Show All Work

Answer _____ square feet

Exemplary Response:

- $10\frac{15}{16}$ square feet

OR

- 10.9375 square feet

Sample Process:

$$\begin{aligned} \bullet A &= \frac{1}{2}\left(5\frac{1}{4} + 3\frac{1}{2}\right) \times 2\frac{1}{2} \\ &= \frac{1}{2}\left(\frac{21}{4} + \frac{14}{4}\right) \times 2\frac{1}{2} \\ &= \frac{1}{2}\left(\frac{35}{4}\right) \times \frac{5}{2} \\ &= \frac{35}{8} \times \frac{5}{2} \\ &= \frac{175}{16} \\ &= 10\frac{15}{16} \text{ square feet} \end{aligned}$$

OR

- Other valid process

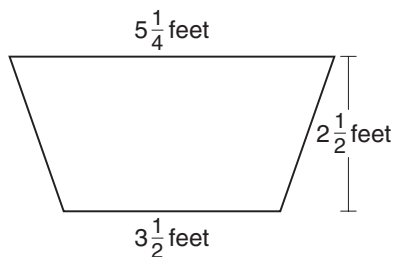
Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

1

Mr. Palma is making a desk that has a top in the shape of a trapezoid, as shown in the diagram below.



What is the area, in square feet, of the top of the desk?

Show All Work

$$A = \frac{1}{2} (b_1 + b_2) \times h$$

$$A = \frac{1}{2} \left(5\frac{1}{4} + 3\frac{1}{2} \right) \times 2\frac{1}{2}$$

$$A = \frac{1}{2} \left(8\frac{3}{4} \right) \times 2\frac{1}{2}$$

Answer 10.9375 square feet

Test 2—Question 1 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 10.9375 square feet. A correct complete process is shown, but not required. The response receives a Score Point 2.

Test 2—Question 1
Score Point 1

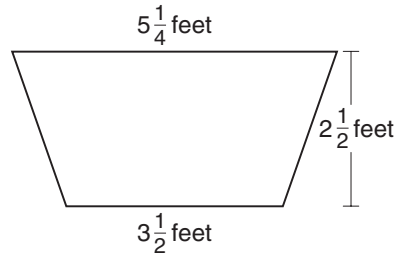
This response shows a correct complete process, but a computational error results in an incorrect answer. The computational error is made when the student adds $5\frac{1}{4}$ and $3\frac{1}{2}$ getting 9.25 instead of 8.75. Therefore, this response receives a Score Point 1.

SCORE POINT 1

1



Mr. Palma is making a desk that has a top in the shape of a trapezoid, as shown in the diagram below.



What is the area, in square feet, of the top of the desk?

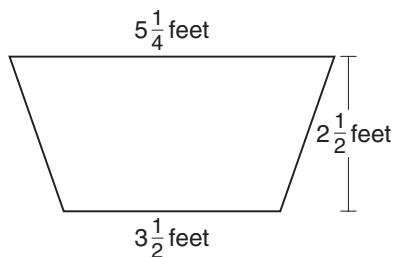
Show All Work

$$\begin{aligned} & \frac{1}{2} \cdot \left(5\frac{1}{4} + 3\frac{1}{2} \right) \cdot 2\frac{1}{2} \\ & .5 \cdot 9.25 \cdot 2.5 \\ & 11.6 \end{aligned}$$

Answer 11.6 square feet

SCORE POINT 0**1**

Mr. Palma is making a desk that has a top in the shape of a trapezoid, as shown in the diagram below.



What is the area, in square feet, of the top of the desk?

Show All Work

$$\begin{array}{r} 2.5 \\ 3.5 \\ \hline 8.75 \end{array}$$

Answer 8.75 square feet

**Test 2—Question 1
Score Point 0**

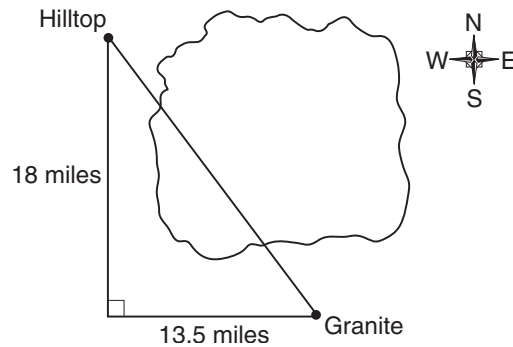
This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

Test 2—Question 2: Problem Solving

2



It is not possible for Sarah to drive directly from Hilltop to Granite because she must drive around a lake. She drives 18 miles south from Hilltop and 13.5 miles east to get to Granite to avoid the lake, as shown in the diagram below.



How many miles shorter would the drive be if it were possible for Sarah to drive directly from Hilltop to Granite?

Show All Work

Answer _____ miles shorter

Exemplary Response:

- 9 miles shorter

AND

- Correct complete process

Sample Process:

- Driving around the lake:

$$18 + 13.5 = 31.5 \text{ miles}$$

Distance through the lake:

$$\begin{aligned}\sqrt{18^2 + 13.5^2} &= \sqrt{324 + 182.25} \\ &= \sqrt{506.25} \\ &= 22.5 \text{ miles}\end{aligned}$$

Total miles shorter:

$$31.5 - 22.5 = 9 \text{ miles}$$

OR

- Other valid process

Rubric:

2 points Exemplary response

1 point Correct answer only
OR

Correct complete
process; error in
computation

0 points Other

Test 2—Question 2

Score Point 2

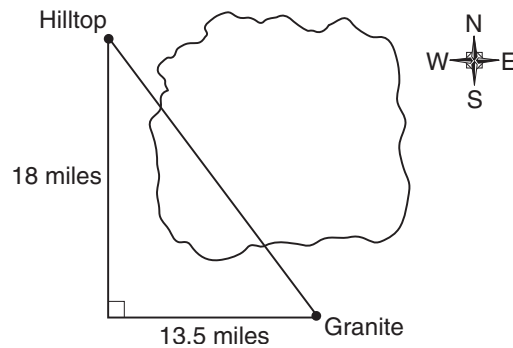
This response matches the exemplary response contained in the rubric. The student shows a correct complete process and the correct answer of 9 miles shorter. The response receives a Score Point 2.

SCORE POINT 2

2



It is not possible for Sarah to drive directly from Hilltop to Granite because she must drive around a lake. She drives 18 miles south from Hilltop and 13.5 miles east to get to Granite to avoid the lake, as shown in the diagram below.



How many miles shorter would the drive be if it were possible for Sarah to drive directly from Hilltop to Granite?

Show All Work

$$\text{Pythagorean Theorem} = a^2 + b^2 = c^2$$

$$18^2 + 13.5^2 = c^2$$

$$324 + 182.25 = c^2$$

$$\sqrt{506.25} = \sqrt{c^2}$$

$$22.5 = c$$

$$\begin{array}{r} 1 \\ 2 \overline{) 31.5} \\ \underline{22.5} \\ 9.0 \end{array}$$

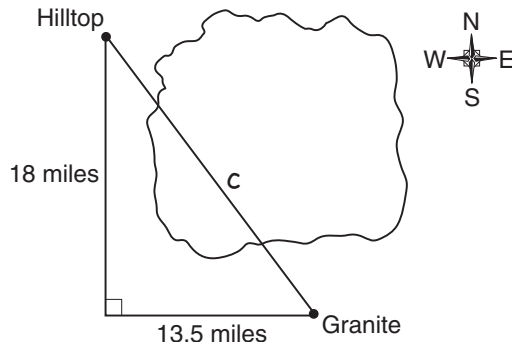
Answer 9 miles shorter

SCORE POINT 1

2



It is not possible for Sarah to drive directly from Hilltop to Granite because she must drive around a lake. She drives 18 miles south from Hilltop and 13.5 miles east to get to Granite to avoid the lake, as shown in the diagram below.



How many miles shorter would the drive be if it were possible for Sarah to drive directly from Hilltop to Granite?

Show All Work

$$\begin{array}{rcl}
 18^2 + 13.5^2 = c^2 & -31.5 & \\
 324 + 182.25 = c^2 & \underline{22.5} & \\
 \underline{+13.5} & 11.0 & \\
 31.5 & & \\
 22.5 = c^2 & &
 \end{array}$$

Answer 11 miles shorter

Test 2—Question 2 Score Point 1

This response shows a correct complete process. However, a computational error results in an incorrect answer. The computational error is made when the student subtracts 22.5 from 31.5 getting 11.0 instead of 9.0. Therefore, this response receives a Score Point 1.

Test 2—Question 2
Score Point 0

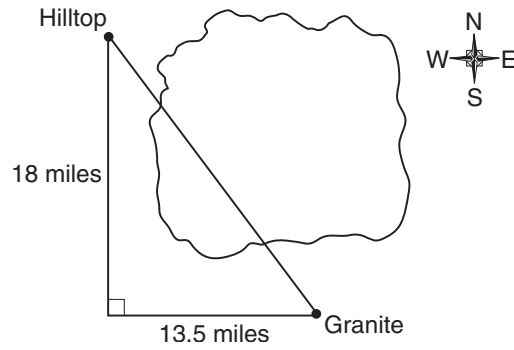
This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2



It is not possible for Sarah to drive directly from Hilltop to Granite because she must drive around a lake. She drives 18 miles south from Hilltop and 13.5 miles east to get to Granite to avoid the lake, as shown in the diagram below.



How many miles shorter would the drive be if it were possible for Sarah to drive directly from Hilltop to Granite?

Show All Work

$$\begin{array}{r} 18 \\ -13.5 \\ \hline 4.5 \end{array}$$

Answer 4.5 miles shorter

Test 2—Question 3: Algebra and Functions

- 3** John works for a T-shirt shop that buys shirts at a wholesale cost from a manufacturer and sells the shirts to the public. The price of each shirt is marked up by the same percentage. One of the shirts costs \$10.00 wholesale and the store is selling it for \$14.20. What is the selling price of a shirt that was purchased wholesale from the manufacturer for \$12.00?

Show All Work

Answer \$ _____

Exemplary Response:

- \$17.04

Sample Process:

- $10m = 14.20$
 $m = 14.20 \div 10 = 1.42$
 $1.42 \times 12.00 = 17.04$

OR

- $\frac{14.20}{10.00} = \frac{x}{12.00}$
 $10.00x = 14.20 \times 12.00$
 $x = 17.04$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

Test 2—Question 3 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of \$17.04. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2

- 3** John works for a T-shirt shop that buys shirts at a wholesale cost from a manufacturer and sells the shirts to the public. The price of each shirt is marked up by the same percentage. One of the shirts costs \$10.00 wholesale and the store is selling it for \$14.20. What is the selling price of a shirt that was purchased wholesale from the manufacturer for \$12.00?

Show All Work

$$14.20 \div 10.00 = 1.42$$

$$12.00 \times 1.42 = 17.04$$

Answer \$ 17.04

Test 2—Question 3 Score Point 1

This response shows a correct complete process. However, a computational error results in an incorrect answer. The computational error is made when the student divides 1,704 by 100 getting 17.40 instead of 17.04. Therefore, this response receives a Score Point 1.

SCORE POINT 1

- 3** John works for a T-shirt shop that buys shirts at a wholesale cost from a manufacturer and sells the shirts to the public. The price of each shirt is marked up by the same percentage. One of the shirts costs \$10.00 wholesale and the store is selling it for \$14.20. What is the selling price of a shirt that was purchased wholesale from the manufacturer for \$12.00?

Show All Work

$$\begin{array}{r} 14.20 \\ 10.00 \overline{) 1420} \\ 17.40 \\ 12.00 \end{array}$$

$$\begin{array}{r} 12.00 \\ \times 142 \\ \hline 1704 \end{array}$$

$$\begin{array}{r} 14.20 \\ \times 100 \\ \hline 1420 \\ 14.2 \\ 10.00 \overline{) 1420} \\ 17.40 \\ 100 \overline{) 1704} \end{array}$$

Answer \$ 17.40

SCORE POINT 0

- 3** John works for a T-shirt shop that buys shirts at a wholesale cost from a manufacturer and sells the shirts to the public. The price of each shirt is marked up by the same percentage. One of the shirts costs \$10.00 wholesale and the store is selling it for \$14.20. What is the selling price of a shirt that was purchased wholesale from the manufacturer for \$12.00?

Show All Work


\$14.20	\$12.00
<u>-10.00</u>	<u>+ 4.20</u>
\$4.20	\$16.20

Answer \$ \$16.20

**Test 2—Question 3
Score Point 0**

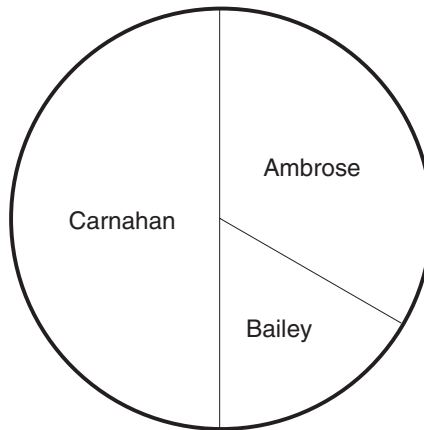
This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

Test 2—Question 4: Data Analysis and Probability

- 4**  Use your protractor to solve this problem.

The results of the school election are shown in the circle graph below.

Election Results



If 4,374 votes were cast in the election, how many votes were cast for candidate Bailey?

Show All Work

Answer _____ votes

Exemplary Response:

- 729 votes

Sample Process:

$$\begin{aligned} \bullet \quad 4,374 \left(\frac{60}{360} \right) &= \frac{4,374}{6} \\ &= 729 \end{aligned}$$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

Test 2—Question 4
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 729 votes. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2

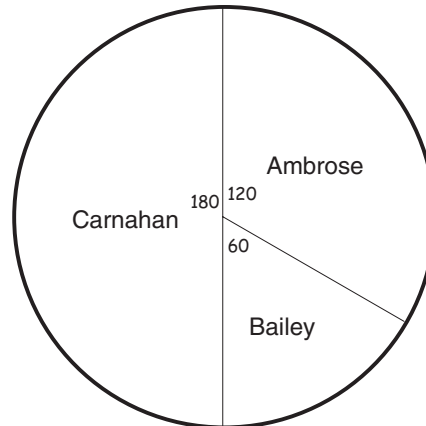
4



Use your protractor to solve this problem.

The results of the school election are shown in the circle graph below.

Election Results



If 4,374 votes were cast in the election, how many votes were cast for candidate Bailey?

Show All Work

$$2187 \frac{60}{120} \frac{3}{6} \frac{1}{3}$$

$$\frac{1}{3}(2187) = 729$$

Answer 729 votes

SCORE POINT 1

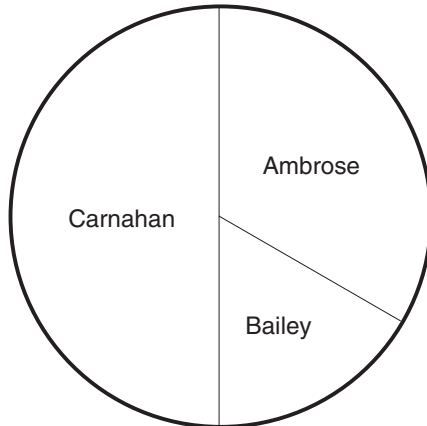
4



Use your protractor to solve this problem.

The results of the school election are shown in the circle graph below.

Election Results



If 4,374 votes were cast in the election, how many votes were cast for candidate Bailey?

Show All Work

$$4374 \div 6$$

Answer 724 votes

Test 2—Question 4 Score Point 1

This response shows a correct complete process. However, a computational error results in an incorrect answer. The computational error is made when the student divides 4,374 by 6 getting 724 instead of 729. Therefore, this response receives a Score Point 1.

Test 2—Question 4
Score Point 0

This response shows an incorrect answer and an incorrect process. The student does not measure two of the angles correctly. Therefore, this response receives a Score Point 0.

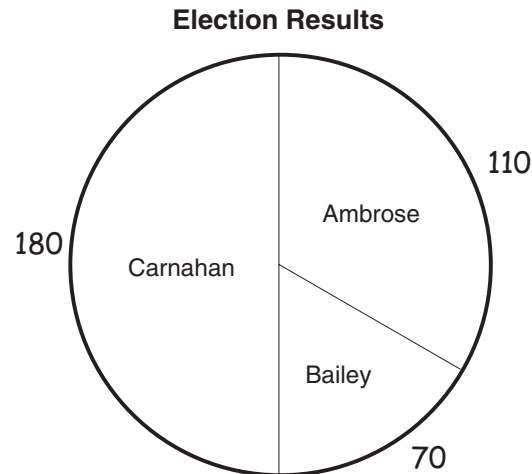
SCORE POINT 0

4



Use your protractor to solve this problem.

The results of the school election are shown in the circle graph below.



If 4,374 votes were cast in the election, how many votes were cast for candidate Bailey?

Show All Work

$$\begin{array}{r} 4,374 \\ -2,187 \\ \hline 2,187 \end{array}$$

$$180 \overline{) 2187} \begin{array}{r} 12.15 \end{array}$$

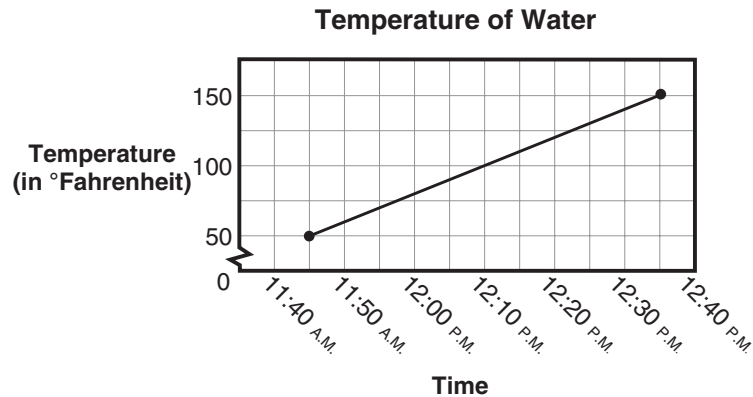
Answer 850.5 votes

Test 2—Question 5: Problem Solving

5



Jim heated water in a pan as part of an experiment. The graph below shows how the temperature of the water, in degrees Fahrenheit ($^{\circ}\text{F}$), changed as a function of time.



At what rate, in degrees Fahrenheit per minute, did the temperature of the water increase?

Show All Work

Answer _____ $^{\circ}\text{F}$ per minute

Exemplary Response:

- 2°F per minute

AND

- Correct complete process

Sample Process:

- Time elapsed: $12:35 - 11:45 = 50$ minutes

Temp. change: $150 - 50 = 100^{\circ}\text{F}$

Rate of temp. change: $= \frac{100^{\circ}\text{F}}{50 \text{ minutes}}$

$= 2^{\circ}\text{F per minute}$

OR

- Other valid process

Rubric:

2 points Exemplary response

1 point Correct answer only

OR

Correct complete
process; error in
computation

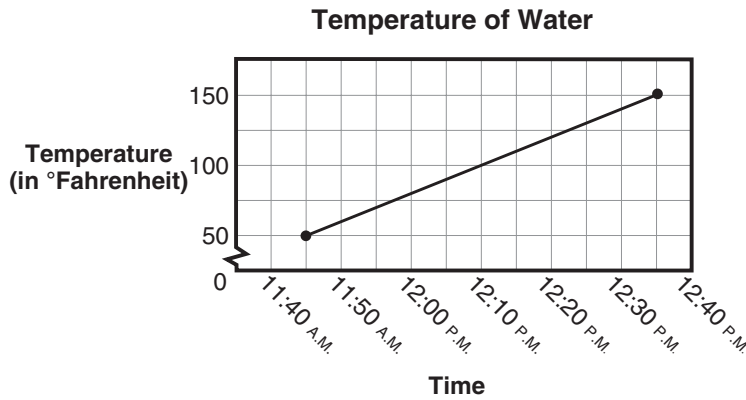
0 points Other

SCORE POINT 2

5



Jim heated water in a pan as part of an experiment. The graph below shows how the temperature of the water, in degrees Fahrenheit (°F), changed as a function of time.



At what rate, in degrees Fahrenheit per minute, did the temperature of the water increase?

Show All Work

$$m = \frac{150 - 50}{12:35 - 11:45}$$

$$m = \frac{100}{50}$$

$$m = 2$$

Answer 2 °F per minute

Test 2—Question 5 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and the correct answer of 2°F per minute. The response receives a Score Point 2.

Test 2—Question 5
Score Point 1

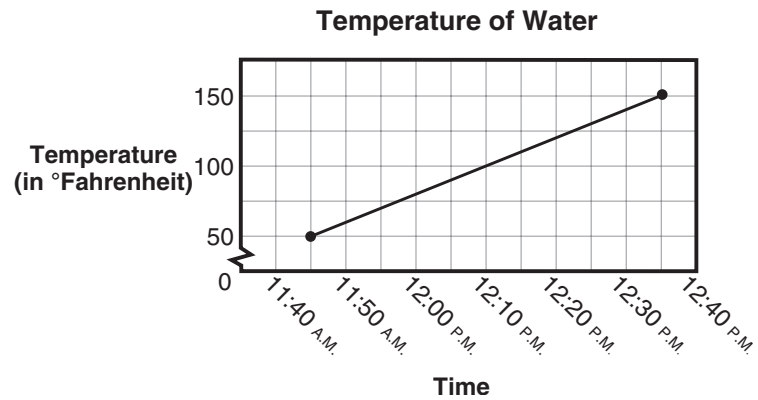
This response shows a correct answer on the answer line, but no process is shown to support the answer as required by the rubric. Therefore, this response receives a Score Point 1.

SCORE POINT 1

5



Jim heated water in a pan as part of an experiment. The graph below shows how the temperature of the water, in degrees Fahrenheit ($^{\circ}\text{F}$), changed as a function of time.



At what rate, in degrees Fahrenheit per minute, did the temperature of the water increase?

Show All Work

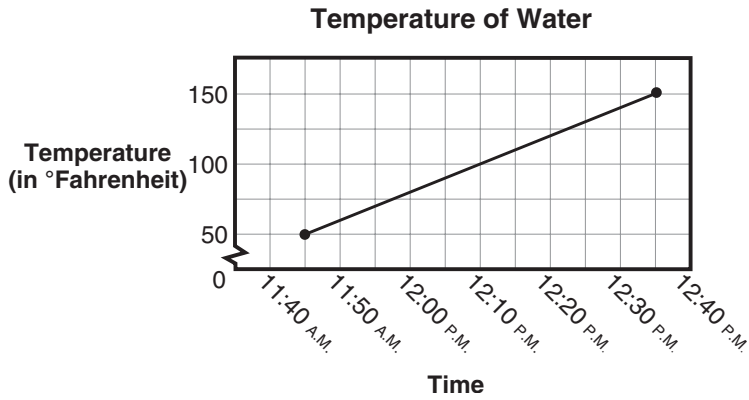
Answer 2 $^{\circ}\text{F}$ per minute

SCORE POINT 0

5



Jim heated water in a pan as part of an experiment. The graph below shows how the temperature of the water, in degrees Fahrenheit ($^{\circ}\text{F}$), changed as a function of time.



At what rate, in degrees Fahrenheit per minute, did the temperature of the water increase?

Show All Work 11:45 - 12:35
 50 minutes $\overset{3}{\underset{50}{\overline{)150}}}$

Answer 3 $^{\circ}\text{F}$ per minute

Test 2—Question 5 Score Point 0

This response shows an incorrect answer and an incorrect process. The student does not show the change in temperature. Therefore, this response receives a Score Point 0.

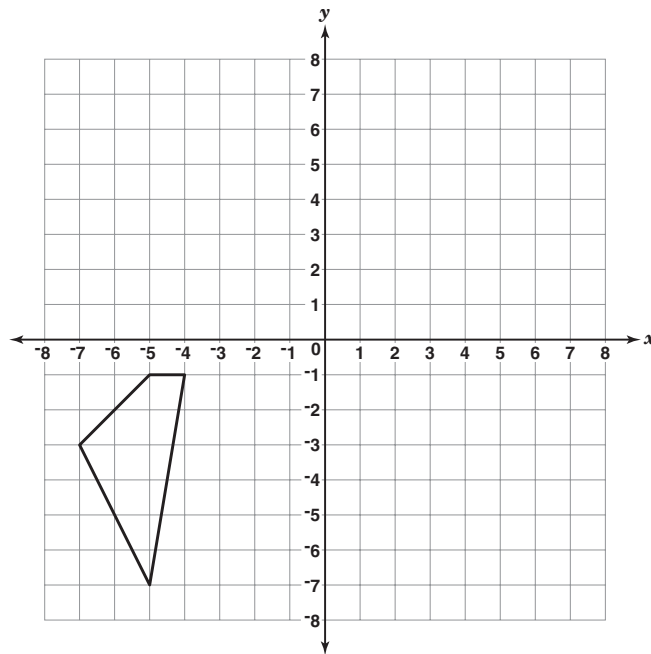
Test 2—Question 6: Geometry

6



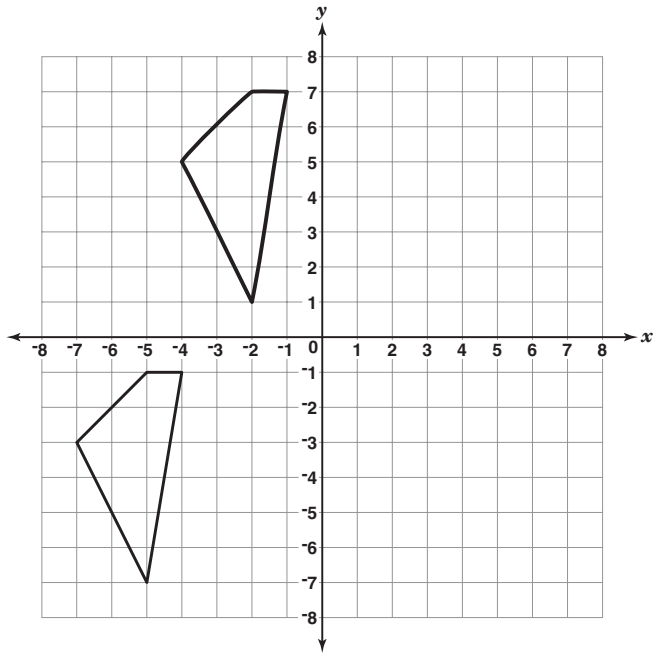
Use your ruler as a straightedge.

On the coordinate plane below, draw the figure translated 8 units up and 3 units to the right.



Exemplary Response:

•



Rubric:

2 points	Exemplary response
1 point	Correctly translates 8 units up OR Correctly translates 3 units to the right
0 points	Other

Test 2—Question 6

Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct image after a translation of 8 units up and 3 units to the right. The response receives a Score Point 2.

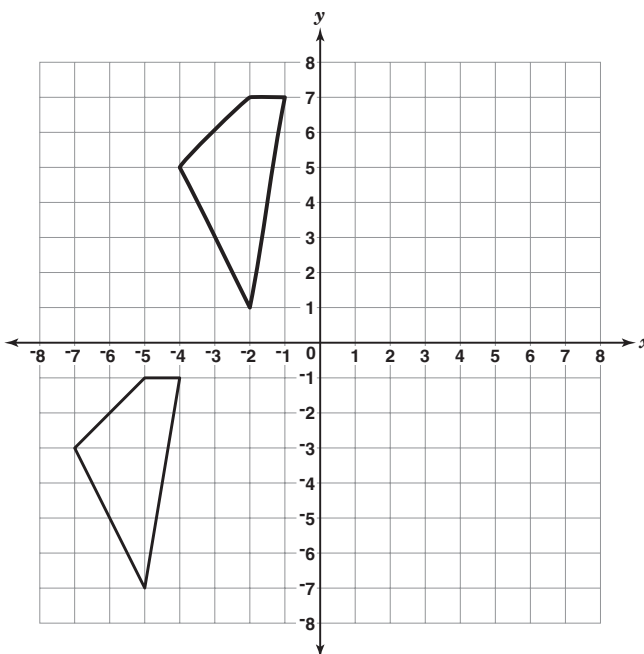
SCORE POINT 2

6



Use your ruler as a straightedge.

On the coordinate plane below, draw the figure translated 8 units up and 3 units to the right.



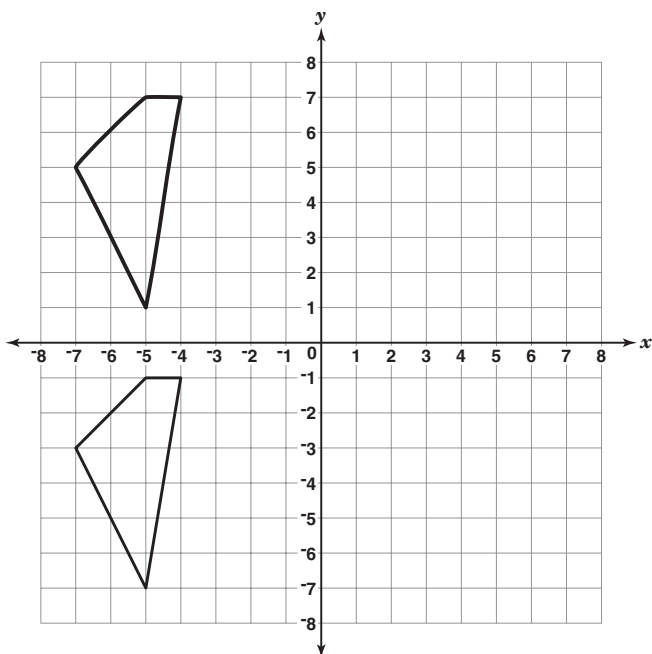
SCORE POINT 1

6



Use your ruler as a straightedge.

On the coordinate plane below, draw the figure translated 8 units up and 3 units to the right.



Test 2—Question 6 Score Point 1

This response shows the image after only one correct translation of 8 units up. The student does not translate the figure 3 units to the right. Therefore, this response receives a Score Point 1.

Test 2—Question 6
Score Point 0

This response does not show a correct image of either of the two translations. Therefore, this response receives a Score Point 0.

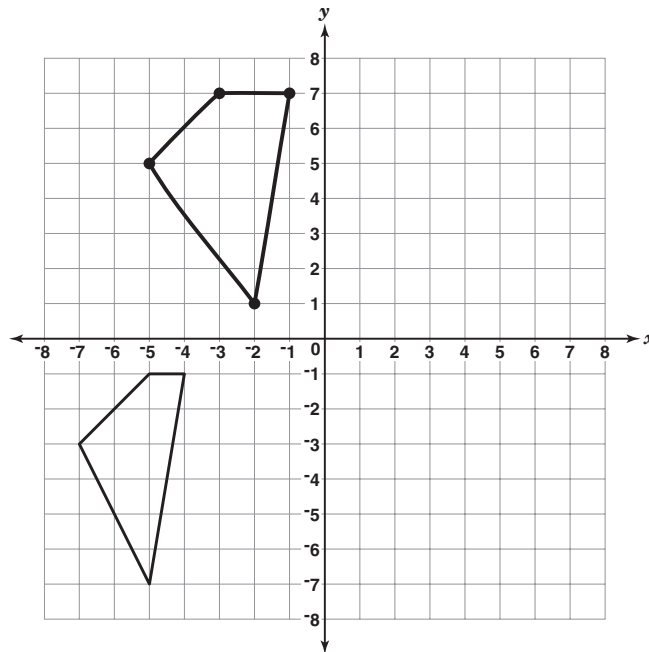
SCORE POINT 0

6



Use your ruler as a straightedge.

On the coordinate plane below, draw the figure translated 8 units up and 3 units to the right.



Test 2—Question 7: Algebra and Functions

- 7** Kyle is going to the carnival. The cost of admission is \$4 and each ride costs \$2. He has a total of \$35 to spend.
- If he spends \$6 on food, what is the maximum number of rides Kyle can go on?

Show All Work

Answer _____ rides

Exemplary Response:

- 12 rides

Sample Process:

- $4 + 2x + 6 \leq 35$
 $2x + 10 \leq 35$
 $2x \leq 25$
 $x \leq 12.5$

OR

- Other valid process

Rubric:

- | | |
|-----------------|--|
| 2 points | Exemplary response |
| 1 point | Complete correct process; error in computation |
| | OR |
| | Answer of 12.5 rides |
| 0 points | Other |

Test 2—Question 7 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 12 rides. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2

- 7** Kyle is going to the carnival. The cost of admission is \$4 and each ride costs \$2. He has a total of \$35 to spend.
- If he spends \$6 on food, what is the maximum number of rides Kyle can go on?

Show All Work

$$\begin{array}{r} \$6 \\ +\$4 \\ \hline \$10 \end{array} \quad \begin{array}{r} 35 \\ -10 \\ \hline \$25 \end{array} \quad \begin{array}{r} 12.5 \\ 2 \overline{) 25} \end{array}$$

Answer 12 rides

Test 2—Question 7 Score Point 1

This response shows a correct complete process. However, a computational error results in an incorrect answer. The computational error is made when the student divides 25 by 2 getting 17.5 instead of 12.5. Therefore, this response receives a Score Point 1.

SCORE POINT 1

- 7** Kyle is going to the carnival. The cost of admission is \$4 and each ride costs \$2. He has a total of \$35 to spend.
- If he spends \$6 on food, what is the maximum number of rides Kyle can go on?

Show All Work

$$\begin{array}{r} 35 \\ -4 \\ \hline 31 \\ 2 \overline{) 31} \\ -6 \\ \hline 25 \end{array} \quad \begin{array}{r} 17.5 \\ 2 \overline{) 25} \\ 1 \\ \hline 15 \\ 14 \\ \hline 010 \end{array}$$

Answer 17 rides

SCORE POINT 0

- 7** Kyle is going to the carnival. The cost of admission is \$4 and each ride costs \$2. He has a total of \$35 to spend.

If he spends \$6 on food, what is the maximum number of rides Kyle can go on?

Show All Work

$$\begin{aligned}4x + 2 + 6 &= 35 \\4x + 8 &= 35 \\4x &= 27 \\x &= 6.75\end{aligned}$$

Answer 6 rides

**Test 2—Question 7
Score Point 0**

This response shows an incorrect answer and an incorrect process. The student sets up and uses an incorrect equation, $4x + 2 + 6 = 35$, instead of $2x + 4 + 6 = 35$. Therefore, this response receives a Score Point 0.

Test 2—Question 8: Problem Solving

- 8** A new business had expenses of \$250 in the first month of operation. During the first month, the ratio of income to expenses was 6:5.
- During the second month, the income was \$25 more than double that of the previous month, and the ratio of income to expenses was 5:4.
- What was the increase in PROFIT from the first month to the second month?

$$\text{Profit} = \text{Income} - \text{Expenses}$$

Show All Work

Answer \$ _____

Exemplary Response:

- \$75

AND

- Correct complete process

Sample Process:

- Month 1:

$$\frac{I}{\$250} = \frac{6}{5}$$

$$I = \$300$$

$$\text{Profit} = \$300 - \$250$$

$$= \$50$$

Month 2:

$$2(\$300) + \$25 = \$625$$

$$\frac{\$625}{E} = \frac{5}{4}$$

$$E = \$500$$

$$\text{Profit} = \$625 - \$500$$

$$= \$125$$

$$\$125 - \$50 = \$75$$

OR

- Other valid process

Rubric:

3 points Exemplary response

2 points Correct answer only
OR

Correct complete
process; error in
computation

1 point Correct process for
determining profit
in the first month

OR

Correct process
for determining
expenses in the
second month

0 points Other

Test 2—Question 8 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and the correct answer of \$75. The response receives a Score Point 3.

SCORE POINT 3

8 A new business had expenses of \$250 in the first month of operation. During the first month, the ratio of income to expenses was 6:5.
300 250

During the second month, the income was \$25 more than double that of the previous month, and the ratio of income to expenses was 5:4.
625 500

What was the increase in PROFIT from the first month to the second month?

Profit = Income – Expenses

Show All Work

$$\frac{250}{x} = \frac{5}{6} \qquad \frac{2(300) + 25}{600 + 25} \qquad \frac{625}{x} = \frac{5}{4}$$

$$x = 300 \qquad 625 \qquad x = 500$$

$$P = 300 - 250 \qquad P = 625 - 500$$

$$P = 50 \qquad P = 125$$

$$125 - 50 = \textcircled{75}$$

Answer \$ 75

Test 2—Question 8 Score Point 2

This response shows a correct answer on the answer line, but no process is shown to support the answer as required by the rubric. Therefore, this response receives a Score Point 2.

SCORE POINT 2

8 A new business had expenses of \$250 in the first month of operation. During the first month, the ratio of income to expenses was 6:5.

During the second month, the income was \$25 more than double that of the previous month, and the ratio of income to expenses was 5:4.

What was the increase in PROFIT from the first month to the second month?

Profit = Income – Expenses

Show All Work

Answer \$ 75.00

SCORE POINT 1

- 8** A new business had expenses of \$250 in the first month of operation. During the first month, the ratio of income to expenses was 6:5.
- During the second month, the income was \$25 more than double that of the previous month, and the ratio of income to expenses was 5:4.
- What was the increase in PROFIT from the first month to the second month?

$$\text{Profit} = \text{Income} - \text{Expenses}$$

Show All Work

$$\begin{array}{l|l} \frac{6}{5} = \frac{n}{250} & \frac{5}{4} = \frac{625}{n} \\ \frac{5n}{5} = \frac{1500}{5} & \frac{5n}{5} = \frac{2500}{5} \\ \text{1st month } n = 300 & \text{2nd month } n = 500 \\ \text{income} & \text{expenses} \end{array}$$

Answer \$ 200**Test 2—Question 8
Score Point 1**

This response shows an incorrect answer on the answer line. However, the student shows a correct process for determining the expenses in the second month. Therefore, this response receives a Score Point 1.

SCORE POINT 0

- 8** A new business had expenses of \$250 in the first month of operation. During the first month, the ratio of income to expenses was 6:5.
- During the second month, the income was \$25 more than double that of the previous month, and the ratio of income to expenses was 5:4.
- What was the increase in PROFIT from the first month to the second month?

$$\text{Profit} = \text{Income} - \text{Expenses}$$

Show All Work

$$\begin{array}{rcl} p = i - e & 1250 & 575 \\ p = 775 - 525 & 250 & 250 \\ & \hline & 500 & 775 \\ & +25 & \\ & \hline & 525 & \end{array}$$

Answer \$ 250**Test 2—Question 8
Score Point 0**

This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

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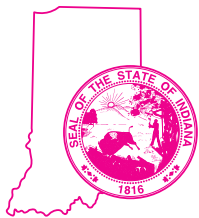
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